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LRN-00-331

PSEG Nuclear LLC

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

LER 272/00-003-00
SALEM GENERATING STATION, UNIT 1
FACILITY OPERATING LICENSE NO. DPR-70
DOCKET NO. 50-272

Gentlemen:

This Licensee Event Report entitled "Reactor Trip Caused By A Failed Voltage Regulation Circuit Card In The Rod Control System " is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(iv).

Sincerely,

M. B. Bezilla
Vice-president - Operations

Attachment

/rbk

C Distribution
LER File 3.7

IE22

CNRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Salem Generating Station Unit 1	05000272	1 OF 4

TITLE (4)

Reactor Trip Caused By A Failed Voltage Regulation Circuit Card In The Rod Control System

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	09	00	00	003	00	09	07	00		0500
									FACILITY NAME	DOCKET NUMBER
										0500

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	100	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	X 50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Brooke Knieriem, Licensing Engineer	(856) 339-1782

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	AA	90	W120	Y						

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

At 1751, on August 9, 2000 an automatic reactor trip occurred on Salem Unit 1 in response to negative flux rate trip signals from Power Range Channels 2 and 3 in the Nuclear Instrument System. The negative flux rate trip signals were initiated in response to the insertion of Control Rods in Group B. All systems performed as designed to safely shutdown the reactor and maintain the reactor in a safe shutdown condition.

The insertion of the Group B Control Rods was caused by the failure of a voltage regulation circuit card used to regulate power to the control rod drive mechanisms' stationary gripper coils.

The defective voltage regulation circuit card was replaced and the Control Rod Drive System was satisfactorily retested. The failed circuit card was returned to the manufacturer for further analysis to determine the cause of failure.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Salem Generating Station Unit 1	05000272	00	- 003 -	00	2 OF 4

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CONDITIONS PRIOR TO OCCURRENCE

At the time of the occurrence, Salem Unit 1 was in MODE 1 (Power Operation) at 100% power.

DESCRIPTION OF OCCURRENCE

On August 9, 2000 Salem Unit 1 was operating at 100% power. At 1751, operators (utility, licensed) received a "Rod Bank Urgent Failure" alarm simultaneously with an automatic reactor trip. The reactor trip occurred in response to negative flux rate trip signals from Power Range Channels 2 and 3 in the Nuclear Instrument System {IG/-}. Following the reactor trip, all safety systems functioned properly and operations personnel responded as required. There were no structures, systems, or components that were inoperable at the start of the event that contributed to the event. No other systems or secondary functions were affected by the event.

Troubleshooting of the Control Rod Drive System {AA/-} identified a defective voltage regulation circuit card {AA/90} (Westinghouse Part No. 6050D16G01) that supplies power to the stationary coils of the Group B control rods. The failed voltage regulation circuit card was replaced with a new card and the Control Rod Drive System was satisfactorily retested.

Because the failure of the voltage regulation circuit card resulted in the actuation of the Reactor Protection System {JC/-}, this event is being reported in accordance with 10CFR50.73 (a)(2)(iv).

APPARENT CAUSE OF OCCURRENCE

The apparent cause of this event was insufficient voltage to the stationary gripper coils for the Group B Control Rod Drive mechanisms caused by a defective voltage regulation circuit card (Westinghouse Part No. 6050D16G01). The inadequate voltage allowed the gripper coils to release the Group B control rods, inserting them into the core. The rapid insertion of negative reactivity caused by the insertion of the Group B Control Rods caused the negative flux rate trip signals to be generated, resulting in the reactor trip.

APPARENT CAUSE OF OCCURRENCE (Cont.)

The circuit card has been sent to the equipment manufacturer for further analysis. A supplemental LER will be submitted to document the results of that analysis if those results significantly change the significance, implications, or consequences of this event or if the analysis results require substantial changes in the corrective actions.

PRIOR SIMILAR OCCURRENCES

A review of LERs for Salem Units 1 and 2 for the past two years identified one LER involving a reactor trip caused by a malfunction of a Rod Control System component. Salem LER 272/99-004-00 reported a reactor trip caused by a loss of power to the stationary gripper coil of a single control rod. In that event, power was lost to the stationary gripper coil for one control rod due to a blown fuse. Further investigation revealed that the fuse for control rod 1A3 blew in response to a low insulation resistance pathway on a control cable in the vicinity of a penetration seal. However, the corrective actions to prevent recurrence of the event described in Salem LER 272/99-004-00 would not have prevented this event.

ASSESSMENT OF SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences or implications associated with this event. All systems performed as designed to safely shutdown the reactor and maintain the reactor in a safe shutdown condition. All safety systems performed as designed.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02 did not occur.

IMMEDIATE CORRECTIVE ACTIONS

1. The failed voltage regulation circuit card was replaced with a new card and the Control Rod Drive System was satisfactorily retested.

2. The failed voltage regulation circuit card was returned to the manufacturer for further analysis to determine the cause of the failure.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Salem Generating Station Unit 1	05000272	00	- 003 -	00	4 OF 4

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTIONS TO PREVENT RECURRENCE

Based upon the results of the analysis of the voltage regulation circuit card by the vendor, further corrective actions may be required.

COMMITMENTS

There are no commitments as a result of this LER.